

FOSSILIZATION OF AMMONITES IN ADVANCED DEEPENING ENVIRONMENTS (HIGHEST MIDDLE TO LOWEST UPPER OXFORDIAN, IBERIAN RANGE, SPAIN).

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In the Ricla area (Zaragoza, Aragonese Branch of the Iberian Range), the upper part of the Yatova Formation show an alternation of wackestone beds and marly intervals, bearing abundant sponges and ammonites from the upper *Bifurcatus* Zone (Middle Oxfordian) and *Hypselum* Zone (Upper Oxfordian). This studied facies is a marly limestone interval ranging from wackestone to packstone and boundstone. The upper boundary represents a gradual facies change from micritic, sponge limestones to more siliciclastic and argillaceous siltstones. However, a stratigraphic gap of the *Bimammatum* Zone (Upper Oxfordian) has been locally recognized in this facies change. The marly stratigraphic interval bearing abundant sponges and ammonites is generally under 1 metre thick, representing a condensed section. Limestone beds are generally 10 to 40 cm thick. Small sponge mud mounds some few metres wide and less than 50 cm high are locally developed. Thickening and coarsening upwards sequences of decimetric thickness are common. Thinning and fining upwards sequences are scarce, and generally developed between the reliefs formed by sponge mounds. Hardground surfaces, ferruginous crusts and glauconite grains are common. Macrofossils of other benthic taxonomic groups, including terebratulid and rhynchonellid brachiopods, bivalves, gastropods, serpulids, bryozoans, crinoids and echinoids are, however, very scarce. Microbial crusts are scarcely developed. Bioturbation textures are common. These Oxfordian deposits are interpreted as developed in an open marine, moderately deep carbonate platform, showing uniform low-energy conditions with extremely reduced carbonate and terrigenous background sedimentation, and very low sedimentation rates, during the late *Bifurcatus* to *Hypselum* zones (latest Middle to earliest Late Oxfordian). The low diversity of the benthic fauna, scarce development of sponge bioherms and ammonite populations inhabiting the platform are palaeobiological criteria which corroborate these palaeoenvironmental conditions. Ammonite assemblages are composed of Sub-Mediterranean taxa. Over 900 ammonite specimens have been collected from the upper *Bifurcatus* and *Hypselum* zones. Oppeliidae (44,2%) and Perisphinctidae (41,5 %) are dominant. Aspidoceratidae (12,2%) are common. Haploceratidae (2,0%) are scarce. One specimen of phylloceratid has been found. Lytoceratids are virtually absent. Ammonoids are commonly preserved as concretionary calcareous moulds of reelaborated elements. Resedimented shells are scarce. The degree of packing of ammonite remains and the stratigraphical persistence display high values. The occurrence of high concentrations of reelaborated ammonites, including taphonic population of type 2, phragmocones completely filled with sediment, and

homogeneous concretionary internal moulds, bearing no signs of abrasion, bioerosion or encrusting organisms (such as serpulids, bryozoans or oysters) are taphonomic criteria indicative of deep marine environments, below wave base, associated with sedimentary starving during a transgression or an episode of relative sea-level rise in the carbonate epicontinental platform. In conclusion, the occurrence of this ammonite recorded association confirms the development of an advanced deepening phase, within a 3rd order deepening/shallowing cycle, in the Aragonese platform, during the late *Bifurcatus* to *Hypselum* zones. Dish- or plate-shaped hexactinosan sponges are dominant, ranging in size from a few millimetres to twenty centimetres. Thin tube-shaped sponges are scarce, and smaller in size.